

RECEIVED
CENTRAL FAX CENTER

APR 13 2007

10/774,389

7

DOCKET NO. PTGF-03083

REMARKS

Applicant submits an Excess Claim Fee Payment Letter for two (2) excess total claims.

Claims 1 and 3-23 are all the claims presently pending in the application. The specification and claims 1, 8, and 16 are amended to more clearly define the invention and claims 21-23 are added. Claims 1, 8, and 16 are independent.

These amendments are made only to more particularly point out the invention for the Examiner and not for narrowing the scope of the claims or for any reason related to a statutory requirement for patentability.

Support for the amendments to claims 1, 8, and 16 is found in the specification at, for example, page 9, line 26 to page 10, line 1 and Figures 3-12. Support for new claims 21-23 is found in the specification at, for example, page 14, line 6 to page 15, line 17 and Figures 9-11.

Applicant also notes that, notwithstanding any claim amendments herein or later during prosecution, Applicant's intent is to encompass equivalents of all claim elements.

Entry of this §1.116 Amendment is proper. Since the Amendments above narrow the issues for appeal and since such features and their distinctions over the prior art of record were discussed earlier, such amendments do not raise a new issue requiring a further search and/or consideration by the Examiner. As such, entry of this Amendment is believed proper and Applicant earnestly solicits entry. No new matter has been added.

Claims 1-5 and 7 stand rejected under 35 U.S.C. § 102(e) as being anticipated by the Lin et al. reference. Claims 6-9 and 14-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Lin et al. reference in view of the Lowery et al. reference. Claims 10-13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Lin et al. reference in view of the Hata et al. reference.

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

An exemplary embodiment of the claimed invention as defined by, for example, independent claim 1, is directed to a light emitting apparatus that includes a semiconductor light emitting element including a substrate. Light radiates from a light emission surface of

10/774,389

8

DOCKET NO. PTGF-03083

the substrate of the light emitting element. The light emission surface is on the substrate opposite to an electrode forming surface of the substrate. The apparatus further includes a transparent structure mounted on the light emission surface of the substrate. The transparent structure is optically connected with the light emission surface and has a light distribution characteristic based on a three-dimensional shape of the transparent structure. The transparent structure has a side surface through which to allow the light to be discharged from the transparent structure.

Some conventional light emitting devices suffer from varying thicknesses of a phosphor coating that blocks the radiation of light, electrodes formed on a surface of the light emitting device that blocks the radiation of light, and wire bonding blocking the radiation of light.

The remaining conventional light emitting devices suffer from a complicated manufacturing process because of bump forming and the requisite need for high precision positioning, which requires the use of an expensive flip-chip bonding machine.

In stark contrast, an exemplary embodiment of the present invention provides a transparent structure that has a side surface through which to allow the light to be discharged from the transparent structure. This feature yields the following effects: (a) since light is radiated through the transparent structure 5, the light emission density lowers and a light distribution characteristic that is different from that of the LED chip 3 by itself can be obtained. Therefore, light can be efficiently applied to phosphor in light transmitting resin 8. Due to this, yellow light wavelength-converted is uniformly mixed with blue light and, thereby unevenness in emission color can be prevented. (page 10, lines 19-25); and (b) since the light emission area is enlarged due to the transparent structure 5, the light shield effect caused by covering the LED chip with phosphor can be reduced, and, thereby, the brightness can be enhances. (page 10, lines 25-29)

II. THE PRIOR ART REJECTIONS

A. The Lin et al. reference

Regarding the rejection of claims 1-5 and 7, the Examiner alleges that the Lin et al. reference teaches the claimed invention. Applicant submits, however, that there are elements of the claimed invention which are neither taught nor suggested by the Lin et al. reference.

10/774,389

9

DOCKET NO. PTGF-03083

None of the applied references teaches or suggests the features of the claimed invention including a transparent structure that has a side surface through which to allow the light to be discharged from the transparent structure. As explained above, this feature is important for improving light distribution and reducing the light blocking effects of a phosphor coating and/or wire bonds.

In stark contrast to the claimed invention, the Lin et al. reference fails to teach or suggest a transparent structure that has a side surface through which to allow the light to be discharged from the transparent structure. For example, a side face and bottom face of a transparent structure 210 is completely surrounded by a die carrier 200 and a light reflective layer 215 and 216 (see Figs. 5A or 5B). Thus, even when light is emitted from an active layer into the transparent structure 210, the light cannot be discharged through the side face from the transparent structure 210. Therefore, it is impossible that the light emitting apparatus that is disclosed by the Lin et al. reference has the effects of the invention.

Therefore, the Lin et al. reference does not teach or suggest each and every element of the claimed invention and the Examiner is respectfully requested to withdraw this rejection of claims 1-5 and 7.

B. The Lin et al. reference in view of the Lowery et al. reference

Regarding the rejection of claims 6-9 and 14-20, the Examiner alleges that the Lowery et al. reference would have been combined with the Lin et al. reference to form the claimed invention. Applicant submits, however, that these references would not have been combined and, even if combined, the combination would not teach or suggest each and every element of the claimed invention.

None of the applied references teaches or suggests the features of the claimed invention including a transparent structure that has a side surface through which to allow the light to be discharged from the transparent structure. As explained above, this feature is important for improving light distribution and reducing the light blocking effects of a phosphor coating and/or wire bonds.

As explained above, the Lin et al. reference very clearly does not teach or suggest this feature.

The Lowery et al. reference does not remedy the deficiencies of the Lin et al.

10/774,389

10

DOCKET NO. PTGF-03083

reference.

Indeed, the Examiner does not allege that the Lowery et al. reference remedies these deficiencies.

Moreover, the Lowery et al. reference does not teach or suggest any transparent structure at all that is mounted on the light emission surface of the substrate of a semiconductor light emitting element, let alone a transparent structure that has a side surface through which to allow the light to be discharged from the transparent structure.

Additionally, Applicant submits that these references would not have been combined as alleged by the Examiner. Indeed, the references are directed to completely different matters and problems.

Specifically, the Lin et al. reference is concerned with the problem a cell-fixing surface absorbing the light emitted from a light emitting diode cell and thereby reducing the efficiency of the light emitting diode when it is affixed to a die carrier. (Col. 1, line 66 - col. 2, line 4).

In stark contrast, the Lowery et al. reference is concerned with the completely different and unrelated problem of providing a phosphor light emitting diode that can generate output light having a well-balanced color characteristic for a true color rendition. (Col. 2, lines 33-37).

One of ordinary skill in the art who was concerned with the problem a cell-fixing surface absorbing the light emitted from a light emitting diode cell and thereby reducing the efficiency of the light emitting diode when it is affixed to a die carrier, as the Lin et al. reference is concerned, would not have referred to the Lowery et al. reference, and vice-versa, because the Lowery et al. reference is concerned with the completely different and unrelated problem of providing a phosphor light emitting diode that can generate output light having a well-balanced color characteristic for a true color rendition. Thus, these references would not have been combined.

Therefore, the Examiner is respectfully requested to withdraw the rejection of claims 6-9 and 14-20.

C. The Lin et al. reference in view of the Hata et al. reference

Regarding the rejection of claims 10-13, the Examiner alleges that the Hata et al.

10/774,389

11

DOCKET NO. PTGF-03083

reference would have been combined with the Lin et al. reference to form the claimed invention. Applicant submits, however, that these references would not have been combined and, even if combined, the combination would not teach or suggest each and every element of the claimed invention.

None of the applied references teaches or suggests the features of the claimed invention including a transparent structure that has a side surface through which to allow the light to be discharged from the transparent structure. As explained above, this feature is important for improving light distribution and reducing the light blocking effects of a phosphor coating and/or wire bonds.

As explained above, the Lin et al. reference very clearly does not teach or suggest this feature.

The Hata et al. reference does not remedy the deficiencies of the Lin et al. reference.

Indeed, the Examiner does not allege that the Hata et al. reference remedies these deficiencies.

The Hata et al. reference merely discloses a semiconductor light emitting element and the various layers making up that element. The Hata et al. reference does not teach or suggest any transparent structure at all that is mounted on the light emission surface of the substrate of a semiconductor light emitting element, let alone a transparent structure that has a side surface through which to allow the light to be discharged from the transparent structure.

Additionally, Applicant submits that these references would not have been combined as alleged by the Examiner. Indeed, the references are directed to completely different matters and problems.

In stark contrast to the Lin et al. reference, the Hata et al. reference is concerned with the completely different and unrelated problem of improving device characteristics by improving the crystalline quality of a device layer composed of a nitride semiconductor. ([0014]).

One of ordinary skill in the art who was concerned with the problem a cell-fixing surface absorbing the light emitted from a light emitting diode cell and thereby reducing the efficiency of the light emitting diode when it is affixed to a die carrier, as the Lin et al. reference is concerned, would not have referred to the Hata et al. reference, and vice-versa,

RECEIVED
CENTRAL FAX CENTER

APR 13 2007

10/774,389

12

DOCKET NO. PTGF-03083

because the Hata et al. reference is concerned with the completely different and unrelated problem of improving device characteristics by improving the crystalline quality of a device layer composed of a nitride semiconductor. Thus, these references would not have been combined.

Therefore, the Examiner is respectfully requested to withdraw the rejection of claims 10-13.

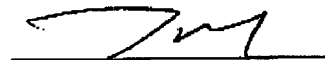
III. FORMAL MATTERS AND CONCLUSION

In view of the foregoing amendments and remarks, Applicant respectfully submits that claims 1 and 3-23, all the claims presently pending in the Application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the Application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.


Respectfully Submitted,

Date: 4/13/07
James E. Howard
Registration No. 39,715

McGinn Intellectual Property Law Group, PLLC
8321 Old Courthouse Rd., Suite 200
Vienna, Virginia 22182
(703) 761-4100
Customer No. 21254

CERTIFICATION OF FACSIMILE TRANSMISSION

I hereby certify that I am filing this Amendment After-Final Rejection Under 37 CFR §1.116 by facsimile with the United States Patent and Trademark Office to Examiner Wai Sing Louie, Group Art Unit 2814 at fax number (571) 273-8300 this 13th day of April, 2007.


James E. Howard, Esq.
Registration No. 39,715